

Amendments to the Drawings:

Figures 1A and 1B have been amended to (a) add lead lines and brackets to reference characters A_x and B_y , (b) remove reference characters X, A, Y and B, and (c) add the subscript $_x$ to reference character A in Figure 1B.

REMARKS

Claims 18-40 are currently pending in this application. Claims 8, 27, 28, 32 and 33 have been amended, and claim 40 has been added in this response.

In the Office Action mailed August 24, 2006, claims 18-25 and 27-34 were rejected. More specifically, the status of the application in light of this Office Action is as follows:

- (A) The drawings were objected to;
- (B) The specification was objected to;
- (C) Claims 18, 21-25, 28, 30, 31, 33 and 34 were rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 6,333,272 to McMillin et al. ("McMillin");
- (D) Claims 19, 20 and 29 were rejected under 35 U.S.C. § 103(a) over McMillin;
- (E) Claims 27 and 32 were rejected under 35 U.S.C. § 103(a) over the combination of McMillin and U.S. Patent No. 6,905,547 to Londergan et al. ("Londergan");
- (F) Claims 26 and 35 were objected to as being dependent from a rejected base claim, but were indicated to be allowable if rewritten in independent form to include the features of the claims from which they depend; and
- (G) Claims 36-39 were allowed.

The undersigned attorney wishes to thank the Examiner for engaging in a telephone conference on October 31, 2006, and requests that this paper constitute the applicants' Interview Summary. During the telephone conference, the present Office Action, McMillin, and a proposed amendment to claim 18 were discussed. The Examiner agreed that the proposed amendment patentably distinguishes claim 18 over McMillin for at least the following reasons. McMillin fails to disclose "flowing a first pulse of a first gas through a first gas conduit, a first valve, and a second gas conduit and into the reaction chamber," and "flowing a second pulse of the first gas through the first gas conduit, a second valve, and the second gas conduit and into the reaction chamber," as recited in claim 18.

A. Objection to the Drawings

Figures 1A and 1B were objected to for failing to include lead lines and for including reference characters not mentioned in the description. Moreover, Figure 1B was objected to for containing an extra reference character. Figures 1A and 1B have been amended to (a) add lead lines and brackets to reference characters A_x and B_y, (b) remove reference characters X, A, Y and B, and (c) add the subscript _x to reference character A in Figure 1B. Therefore, the objection to the drawings should be withdrawn.

B. Objection to the Specification

The abstract was objected to because of an informality. The abstract has been amended in accordance with the Examiner's suggestion. Therefore, the objection to the abstract should be withdrawn.

The disclosure was further objected to because the heading "Summary of the Invention" is missing from the specification. The applicants respectfully submit that such a heading is not required. 37 C.F.R. § 1.73 provides, in relevant part, that "[a] brief summary of the invention indicating its nature and substance, which may include a statement of the object of the invention, *should* precede the detailed description." (Emphasis added.) In fact, the MPEP states that the summary can be brief, including as little as "one or more clear, concise sentences or paragraphs." (MPEP §608.01(d).) In the originally-filed specification, paragraphs [0017-0021] provide an overview of the nature and substance of several embodiments of the invention. Accordingly, the applicants respectfully submit that the objection to the disclosure should be withdrawn.

C. Section 102(b) Rejection over McMillin

Claim 18 was rejected under 35 U.S.C. § 102(b) over McMillan. In light of the agreement reached during the telephone conference on October 31, 2006, the Section 102(b) rejection of claim 18 should be withdrawn.

Claims 21-25 depend from independent claim 18. Accordingly, the Section 102(b) rejection of claims 21-25 should be withdrawn for at least the reasons discussed above with reference to claim 18 and for the additional features of these claims.

Independent claim 28 has, *inter alia*, features generally analogous to the features of claim 18. Accordingly, the Section 102(b) rejection of claim 28 should be withdrawn for at least the reasons discussed above with reference to claim 18 and for the additional features of this claim.

Claims 30 and 31 depend from independent claim 28. Accordingly, the Section 102(b) rejection of claims 30 and 31 should be withdrawn for at least the reasons discussed above with reference to claim 28 and for the additional features of these claims.

Claim 33 was rejected under 35 U.S.C. §102(b) over McMillan. For the reasons discussed below, McMillan fails to disclose or suggest all of the features of this claim.

1. Claim 33 is Directed to a Method for Depositing Material onto a Microfeature Workpiece in a Reaction Chamber Including, *inter alia*, Flowing First and Second Pulses of a Gas into First and Second Portions of a Gas Distributor, wherein the First and Second Portions are in Fluid Communication with Each Other

Claim 33 is directed to a method for depositing material onto a microfeature workpiece in a reaction chamber. The method includes flowing a first pulse of a first gas through a first gas passageway in a valve assembly and into a first portion of a gas distributor at the reaction chamber, and flowing a second pulse of the first gas through a second gas passageway in the valve assembly and into a second portion of the gas distributor. The first and second portions of the gas distributor are in fluid communication with each other. The first and second gas passageways are configured in a parallel arrangement and are in fluid communication with the first gas conduit.

2. McMillan Discloses an Apparatus for Delivering Gas to Different Zones of a Reaction Chamber for Semiconductor Processing

McMillan discloses a gas distribution apparatus for semiconductor processing. The apparatus includes a plurality of gas supplies, a mixing manifold 28, and a processing chamber 10. A first gas supply line 12 delivers the mixed gas to a first zone in the processing chamber 10, and a separate second gas supply line 14 delivers the mixed gas to a second zone in the processing chamber 10. In Figure 7B, the processing chamber 10 includes a two-zone showerhead with separate compartments to keep the gases from the two supply lines separate.

The separate gas supply lines and two-zone showerhead enable an "optimal spatial distribution of the gas feed [and help] achieve uniform etch results across the entire wafer." (McMillan, 3:52-53.)

3. McMillan Fails to Disclose or Suggest a Method for Depositing Material onto a Microfeature Workpiece in a Reaction Chamber Including, *inter alia*, Flowing First and Second Pulses of a Gas into First and Second Portions of a Gas Distributor, wherein the First and Second Portions are in Fluid Communication with Each Other

McMillan fails to disclose or suggest a method for depositing material onto a microfeature workpiece in a reaction chamber including, *inter alia*, "flowing a first pulse of a first gas...into a first portion of a gas distributor at the reaction chamber; and flowing a second pulse of the first gas...into a second portion of the gas distributor, wherein the first and second portions of the gas distributor are in fluid communication with each other," as recited in claim 33. Rather, McMillan discloses a two-zone showerhead with two discrete compartments to keep two gas flows separate within the showerhead and to deliver the gas flows to different zones within the chamber. As such, the compartments are not in fluid communication with each other. Moreover, one skilled in the art would not modify McMillan's two-zone showerhead so that the two compartments would be in fluid communication because such a modification would frustrate at least one purpose of McMillan's invention. Specifically, McMillan's two-zone showerhead enables the apparatus to control the flow of the gas to different zones in the chamber "and thereby to assist in achieving uniform processing (e.g., etching) results across the entire wafer." (McMillan, 4:5-7.) Accordingly, the Section 102(b) rejection of claim 33 should be withdrawn because McMillan fails to disclose or suggest all of the features of claim 33.

Claim 34 depends from independent claim 33. Accordingly, the Section 102(b) rejection of claim 34 should be withdrawn for at least the reasons discussed above with reference to claim 33 and for the additional features of this claim.

D. Section 103(a) Rejection over McMillin

Claims 19 and 20 were rejected under 35 U.S.C. § 103(a) over McMillan. Claims 19 and 20 depend from independent claim 18. Accordingly, the Section 103(a) rejection of claims 19

and 20 should be withdrawn for at least the reasons discussed above with reference to claim 18 and for the additional features of these claims.

E. Section 103(a) Rejection over the combination of McMillin and Londergan

Claims 27 and 32 were rejected under 35 U.S.C § 103(a) over the combination of McMillan and Londergan. Claim 27 depends from independent claim 18, and claim 32 depends from independent claim 28. Accordingly, claims 27 and 32 are patentable over McMillan for at least the reasons discussed above with reference to their respective independent claims and for the additional features of these claims. Moreover, Londergan fails to cure the above-noted deficiencies of McMillin to properly support a Section 103(a) rejection of claims 27 and 32. Therefore, the Section 103(a) rejection of claims 27 and 32 should be withdrawn.

F. Objection to Claims 26 and 35

Claims 26 and 35 were objected to as being dependent on a rejected base claim, but were indicated to be allowable if rewritten in independent form to include the features of the claims from which they depend. Claims 26 and 35 have not been rewritten in independent form because the rejection of their respective independent claims should be withdrawn.

G. Allowed Claims

Although the applicants' attorney agrees with the Examiner's conclusion that claims 36-39 are allowable, the applicants' attorney notes that the claims may be allowable for reasons other than those identified by the Examiner and does not concede that the Examiner's characterization of the terms of the claims and the prior art are correct.

H. New Claim 40

New claim 40 depends from independent claim 33 and also contains features generally analogous to the features included in claim 18. Accordingly, claim 40 is patentable over the applied art for at least the reasons discussed above with reference to claims 18 and 33 and for the additional features of this claims.

I. Conclusion

In view of the foregoing, the pending claims comply with 35 U.S.C. §112 and are patentable over the applied art. The applicants accordingly request reconsideration of the application and a Notice of Allowance. If the Examiner has any questions or believes a telephone conference would expedite prosecution of this application, the Examiner is encouraged to call the undersigned representative at (206) 359-6465.

Respectfully submitted,

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